

<p align="center">10 INK EXAMINATIONS</p>	<p align="center">Page 1 of 2</p>
<p align="center">Division of Forensic Science</p> <p align="center">QUESTIONED DOCUMENTS PROCEDURES MANUAL</p>	<p align="center">Amendment Designator:</p>
	<p align="center">Effective Date: 1-April-2003</p>
<div align="center"> <p>10 INK EXAMINATIONS</p> <p>10.1 Objective</p> <p>To nondestructively examine inks on documents to determine whether they are different or similar to other inks, or whether they originated from a specific writing instrument.</p> <p>10.2 References</p> <ul style="list-style-type: none"> Conway, James V.P.; <u>Evidential Documents</u>; Charles C. Thomas Publisher, 1959 Harrison, Wilson R.; <u>Suspect Documents</u> (Second Edition); Sweet & Maxwell Ltd., 1966 Ellen, David; <u>The Scientific Examination of Documents</u> (Second Edition); Taylor & Francis Ltd., 1997 Hilton, Ordway; <u>Scientific Examination of Questioned Documents</u> (Revised Edition); Elsevier, 1982 Saferstein, Richard; <u>Criminalistics, An Introduction to Forensic Science</u>; Prentice-Hall Inc., 1977 Brunelle, Richard L. & Reed, Robert W.; <u>Forensic Examination of Ink and Paper</u>; Charles C. Thomas Publisher, 1984 Richards, G.B., "The Application of Electronic Video Techniques to Infrared and Ultraviolet Examinations", JFS, Vol. 22, No. 1, 1977. <p>10.3 Equipment</p> <ul style="list-style-type: none"> Light source Stereo microscope Magnifier VSC-2000 Video Spectral Comparator DOYA IR Video Analyzer <p>10.4 Safety Measures</p> <p>Precautionary measures specified in Section 1.3 when working with a UV light source.</p> <p>10.5 Interferences</p> <p>10.5.1 Differences detected in the optical characteristics (e.g. IR absorbance, luminescence) of inks on <u>different</u> documents (substrates) may not be of any significance, since differences in substrates may affect the optical properties of the inks.</p> <p>10.5.2 Storage conditions (e.g. exposure to light, heat, moisture) can affect the optical characteristics of inks during certain tests. Other factors that can affect the optical characteristics include the length of time the ink has been on the paper, and the concentration (density) of the written entry.</p> <p>10.5.3 Inks having the same class characteristics that appear on the same document and display similar optical properties may actually be different inks.</p> </div>	

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<p>10.6 Procedures</p> <p>10.6.1 These procedures may not address any uncommon or unusual circumstances that may be encountered during examinations.</p> <p>10.6.2 The procedures outlined below may not be possible or necessary in every case.</p> <p>10.6.3 Compare the class characteristics of the inks (e.g. color, type). If the examination involves a comparison of an inked entry on a document to a writing instrument, a test mark must be made on that same document. Evaluate the significance of any similarities or dissimilarities.</p> <p>10.6.4 Determine whether the inked entries being compared were all made with the same type of writing instrument.</p> <p>10.6.5 Determine whether there are any writing instrument defects (e.g. burr striations, nib characteristics), and whether they are consistent throughout the inked entries being compared.</p> <p>10.6.6 Examine the inked entries with the VSC-2000. Compare the results of the IR absorbance, reflectance, and luminescent properties; as well as those detected utilizing the UV light source. Evaluate the significance of any similarities or dissimilarities. (Note: The DOYA IR Video Analyzer may also be used, especially in cases where the size or shape of the documents is such that the open architecture of the DOYA is necessary. Although there will undoubtedly be situations where either instrument will yield adequate results, the VSC-2000 has a broader range of capabilities, and for this reason should be the initial instrument of choice. Inks which cannot be differentiated on the DOYA shall be examined with the VSC-2000 (if possible) before reporting any conclusions on the CoA.)</p> <p>10.6.7 Consider the significance of observations in 10.6.3 through 10.6.6, both individually and in combination, and form a conclusion within any appropriate limitations.</p> <p>10.6.8 Inks which cannot be differentiated by any of the nondestructive methods detailed above will generally be referred to the Trace Evidence Section for destructive tests such as thin layer chromatography (TLC) or high pressure liquid chromatography (HPLC). The location of any 'test marks' (ref. 10.6.3) should be made clear to the Trace examiner.</p> <p align="right">◆End</p>	